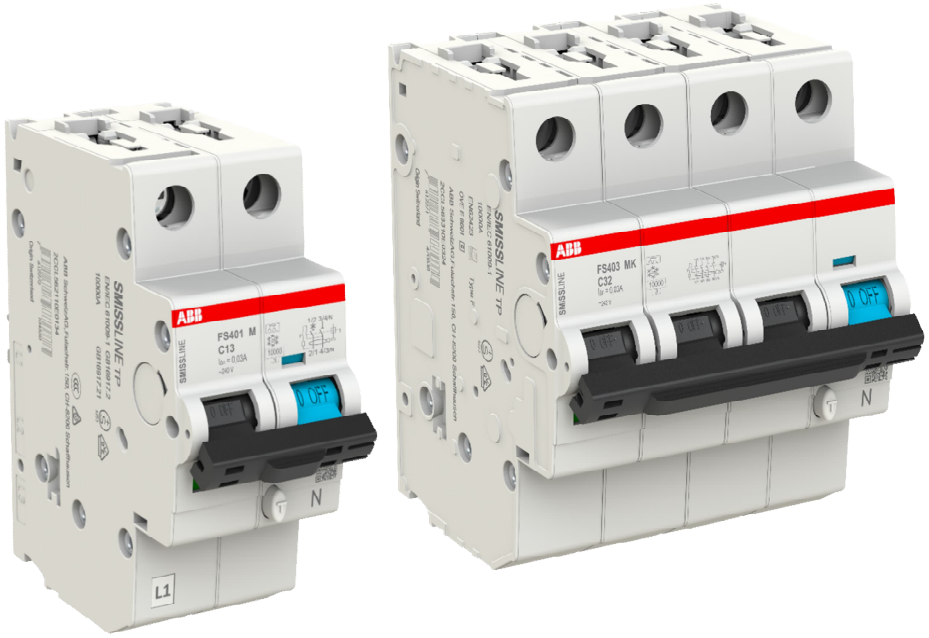
FS400 SMISSLINE TP RCBO

PEP ecopassport®

Product Environmental Profile



Registration number:	**ABBG-00709-V01.01-EN**	Drafting rules:	**PCR-ed4-EN-2021 09 06**
Contact information:	**EPD_ELSB@abb.com**	Supplemented by:	**PSR-0005-ed3.1-EN-2023 12 08**
Verifier accreditation number:	**VH08**	Information and reference documents:	**www.pep-ecopassport.org**
Date of issue:	**January-25**	Validity period:	**5 years**

Independent verification of the declaration and data in compliance with ISO 14025: 2006

Internal: ☐ **External:** ☒

The PCR review was conducted by a panel of experts chaired by Julie Orgelet (Ddemain)

PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022
The components of the present PEP may not be compared with components from any other program.

Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"

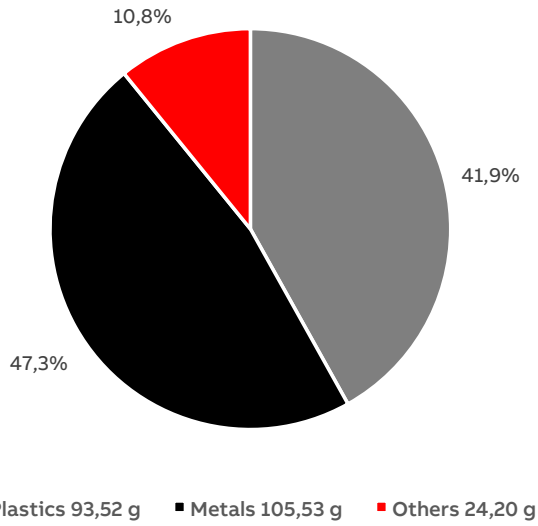
ABB Purpose & Embedding Sustainability

ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow.
With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.
The contect of this PEP cannot be compared with the content based on another program/database.
Scan QR code for more information

General information

Reference product	FS401M-C13/0.03 - 2CCG001678R0001
Description of the product	The FS401M-C13/0.03 is a pluggable Residual Current Circuit Breaker with overcurrent Protection for the SMISSLINE TP systems acc. IEC/EN/DIN EN 61009-1, EN/DIN EN 61009-2-1.
Functional unit	Protect the Industrial / commercial installation against overloads and short circuits and protect people and premises at risk of fire or explosion against insulation defects in a circuit with rated voltage (Un) of 240V and a rated current (In) of 13 A and during the reference service life of the product of 20 years. This protection is ensured in accordance with the following parameters: - Number of poles: 2. - Rated breaking capacity (Icn): 10 kA. - Rated breaking capacity (Icu): 25 kA. - Rated sensitivity (IΔn): 0.03 A - Tripping curve: C. - Type of Residual Current: A. All this is connected to the SMISSLINE TP systems.
Other products covered	FS400 RCBOs homogeneous family: - M, E and MK Series. - 1P+N, 3P+N. - B, C curves. - Ranges from 6 A to 32 A. - Sensitivity of 0.1, 0.3 and 0.03 A
Manufacturing address	ABB Schweiz AG – ELSB (Fulachstrasse 150, 8200 Schaffhausen, Switzerland)

Constituent Materials



Total weight of reference product and packaging	**223,3**	**g**

Plastics as % of weight		**Metals as % of weight**		**Others as % of weight**	
Name and CAS number	Weight%	Name and CAS number	Weight%	Name and CAS number	Weight%
PA66 GF	33,4	**Steel**	29,5	**Silica**	0,4
PBT GF	3,9	**Copper**	9,9	**Resistor**	0,2
PC GF	1,1	**Aluminium**	3,3	**PCB**	0,2
PA66	1,1	**Iron**	2,8	**Cardboard**	9,8
Other plastics	2,4	**Other metals**	1,8	**Misc.**	0,2

RoHS and REACH compatability and other information about the products materials (i.e. halogen free, recyclability)

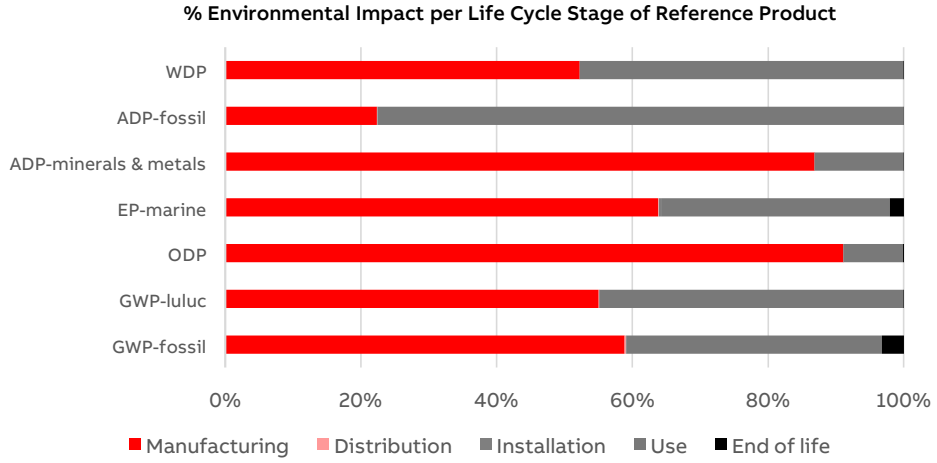
Additional Information

Manufacturing	Includes the environmental impacts associated with extraction and processing of the raw materials used to produce the product and its packaging, transport to the manufacturing site and assembly.
Distribution	Includes the transportation of the packaged product from the manufacturer's last logistic platform to the distributor.
Installation	Includes the manual installation of the products and the end-of-life of packaging.
Use	As the application of this device is mostly industrial, a 50 % In load rate and a 30 % use rate for 20 years were considered. Regarding the energy mix, the energy mixes of the main sales countries were used, with Switzerland being the main contributor.
End of life	Includes the transportation of the product to the final end-of-life treatment site and treatment processes. A value of 100 km transport by lorry is used for the transportation.
Benefits and loads beyond the system boundaries	Prevented impacts of recycling materials.

Environmental Impacts

Reference lifetime	20 years
Product category	Differential circuit-breakers
Installation elements	End-of-life of the packaging components
Use scenario	Power loss calculated acc. PSR criteria (50% In)
Geographical representativeness	Europe
Technological representativeness	Materials and processes data are specific for the production of one FS400 RCBO
Software and database used	SimaPro 9.5.0.1 & Ecoinvent 3.9.1
Energy model used	
Manufacturing	Energy mix of european countries
Installation	Non-applicable
Use	Energy mix of european countries
End of life	Recycling of product and packaging

Common base of mandatory indicators



Environmental impact indicators

Indicator		Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
GWP	Total	kg CO2 eq.	4,29E+00	2,12E+00	6,35E-03	2,61E-02	2,02E+00	1,18E-01	-7,80E-01
	Fossil	kg CO2 eq.	3,60E+00	2,12E+00	6,34E-03	5,33E-03	1,35E+00	1,17E-01	-7,83E-01
	Biogenic	kg CO2 eq.	6,79E-01	-3,84E-03	5,57E-06	2,08E-02	6,61E-01	1,81E-03	3,22E-03
	Luluc	kg CO2 eq.	4,35E-03	2,39E-03	3,69E-06	9,44E-07	1,95E-03	3,85E-06	-9,34E-04
ODP		kg CFC-11 eq.	6,01E-07	5,47E-07	1,38E-10	8,29E-11	5,26E-08	7,12E-10	-2,68E-07
AP		H+ eq.	4,80E-02	3,27E-02	1,94E-05	1,64E-05	1,52E-02	4,35E-05	-1,34E-02
EP	Freshwater	kg P eq.	3,93E-03	2,67E-03	5,34E-07	2,81E-07	1,26E-03	1,08E-06	-9,60E-04
	Marine	kg N eq.	5,69E-03	3,63E-03	6,27E-06	1,66E-05	1,92E-03	1,17E-04	-1,45E-03
	Terrestrial	mol N eq.	5,66E-02	3,44E-02	6,60E-05	7,14E-05	2,18E-02	1,85E-04	-1,40E-02
POPCD		kg NMVOC eq.	1,69E-02	1,08E-02	2,81E-05	2,98E-05	5,96E-03	5,59E-05	-4,31E-03
ADP	Minerals & metals	kg SB eq.	1,05E-03	9,15E-04	2,74E-08	1,39E-08	1,38E-04	4,18E-08	-4,12E-04
	Fossil	MJ	1,48E+02	3,32E+01	8,91E-02	3,76E-02	1,15E+02	7,32E-02	-1,07E+01
WDP		m^3 eq. depr.	2,10E+00	1,10E+00	3,68E-04	2,49E-04	1,00E+00	1,47E-03	-4,65E-01

Resource use indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
PERE	MJ	1,16E+02	6,31E+00	1,93E-03	2,67E-03	1,09E+02	5,76E-03	-1,27E+00
PERM	MJ	2,82E-01	2,82E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,16E+02	6,59E+00	1,93E-03	2,67E-03	1,09E+02	5,76E-03	-1,27E+00
PENRE	MJ	1,46E+02	3,10E+01	8,91E-02	3,76E-02	1,15E+02	7,32E-02	-1,07E+01
PENRM	MJ	2,17E+00	2,17E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,48E+02	3,32E+01	8,91E-02	3,76E-02	1,15E+02	7,32E-02	-1,07E+01

Common base of mandatory indicators

Use of secondary materials, water, and energy resources

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	4,11E-01	4,50E-02	1,45E-05	2,04E-05	3,66E-01	8,49E-05	-1,54E-02

Waste category indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
HWD	kg	1,68E-02	3,66E-03	2,27E-06	1,16E-04	1,17E-02	1,31E-03	-4,71E-04
N-HWD	kg	1,22E+00	4,48E-01	2,87E-03	9,94E-03	6,82E-01	7,94E-02	-1,25E-01
RWD	kg	1,60E-03	1,00E-04	4,36E-08	3,30E-08	1,50E-03	8,92E-08	-1,16E-05

Output flow indicators

Indicator	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life	Benefits
CfRu	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MfR	kg	1,67E-01	4,39E-02	0,00E+00	4,38E-02	0,00E+00	7,98E-02	0,00E+00
MfER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Other indicators

Indicator		Unit	Total
Biogenic Carbon	Product	kg of C	2,76E-05
	Packaging	kg of C	9,86E-03

Extrapolation Factors

For other products than the Reference product covered by this PEP, the environmental impacts for each phase of the lifecycle are obtained by multiplying the values of the Reference product by the following coefficients:

* if the coefficient is !1, the impacts of the phase of the life cycle are assimilated to the Reference product, meaning that the impacts are unchanged in comparison to the Reference product

Product name	Manufacturing	Distribution	Installation	Use	End of life	Benefits
2CCG001669R0001	1,00	1,00	1,00	0,77	1,00	1,00
2CCG001670R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001671R0001	1,00	1,00	1,00	1,00	1,00	1,00
2CCG001672R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001673R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001674R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001675R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001676R0001	1,00	1,00	1,00	0,77	1,00	1,00
2CCG001677R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001678R0001	1,00	1,00	1,00	1,00	1,00	1,00
2CCG001679R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001680R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001681R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001682R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001683R0001	1,00	1,00	1,00	0,77	1,00	1,00
2CCG001684R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001685R0001	1,00	1,00	1,00	1,00	1,00	1,00
2CCG001686R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001687R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001688R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001689R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001711R0001	2,00	2,00	2,00	2,15	2,00	2,00
2CCG001712R0001	2,00	2,00	2,00	2,23	2,00	2,00
2CCG001713R0001	2,00	2,00	2,00	2,36	2,00	2,00
2CCG001714R0001	2,00	2,00	2,00	2,54	2,00	2,00
2CCG001715R0001	2,00	2,00	2,00	2,87	2,00	2,00
2CCG001716R0001	2,00	2,00	2,00	3,41	2,00	2,00
2CCG001717R0001	2,00	2,00	2,00	4,41	2,00	2,00
2CCG001725R0001	2,00	2,00	2,00	2,15	2,00	2,00
2CCG001726R0001	2,00	2,00	2,00	2,23	2,00	2,00
2CCG001727R0001	2,00	2,00	2,00	2,36	2,00	2,00
2CCG001728R0001	2,00	2,00	2,00	2,54	2,00	2,00
2CCG001729R0001	2,00	2,00	2,00	2,87	2,00	2,00
2CCG001730R0001	2,00	2,00	2,00	3,41	2,00	2,00
2CCG001731R0001	2,00	2,00	2,00	4,41	2,00	2,00
2CCG001732R0001	2,00	2,00	2,00	2,15	2,00	2,00
2CCG001733R0001	2,00	2,00	2,00	2,23	2,00	2,00

Extrapolation Factors

Product name	Manufacturing	Distribution	Installation	Use	End of life	Benefits
2CCG001734R0001	2,00	2,00	2,00	2,36	2,00	2,00
2CCG001735R0001	2,00	2,00	2,00	2,54	2,00	2,00
2CCG001736R0001	2,00	2,00	2,00	2,87	2,00	2,00
2CCG001737R0001	2,00	2,00	2,00	3,41	2,00	2,00
2CCG001738R0001	2,00	2,00	2,00	4,41	2,00	2,00
2CCG001656R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001657R0001	1,00	1,00	1,00	1,00	1,00	1,00
2CCG001658R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001659R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001660R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001661R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001662R0001	1,00	1,00	1,00	0,77	1,00	1,00
2CCG001663R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001664R0001	1,00	1,00	1,00	1,00	1,00	1,00
2CCG001665R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001666R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001667R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001668R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001718R0001	2,00	2,00	2,00	2,15	2,00	2,00
2CCG001719R0001	2,00	2,00	2,00	2,23	2,00	2,00
2CCG001720R0001	2,00	2,00	2,00	2,36	2,00	2,00
2CCG001721R0001	2,00	2,00	2,00	2,54	2,00	2,00
2CCG001722R0001	2,00	2,00	2,00	2,87	2,00	2,00
2CCG001723R0001	2,00	2,00	2,00	3,41	2,00	2,00
2CCG001724R0001	2,00	2,00	2,00	4,41	2,00	2,00
2CCG001690R0001	1,00	1,00	1,00	0,77	1,00	1,00
2CCG001691R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001692R0001	1,00	1,00	1,00	1,00	1,00	1,00
2CCG001693R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001694R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001695R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001696R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001697R0001	1,00	1,00	1,00	0,77	1,00	1,00
2CCG001698R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001699R0001	1,00	1,00	1,00	1,00	1,00	1,00
2CCG001700R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001701R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001702R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001703R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001704R0001	1,00	1,00	1,00	0,77	1,00	1,00
2CCG001705R0001	1,00	1,00	1,00	0,88	1,00	1,00
2CCG001706R0001	1,00	1,00	1,00	1,00	1,00	1,00

Extrapolation Factors

Product name	Manufacturing	Distribution	Installation	Use	End of life	Benefits
2CCG001707R0001	1,00	1,00	1,00	1,16	1,00	1,00
2CCG001708R0001	1,00	1,00	1,00	1,44	1,00	1,00
2CCG001709R0001	1,00	1,00	1,00	1,89	1,00	1,00
2CCG001710R0001	1,00	1,00	1,00	2,70	1,00	1,00
2CCG001739R0001	2,00	2,00	2,00	2,15	2,00	2,00
2CCG001740R0001	2,00	2,00	2,00	2,23	2,00	2,00
2CCG001741R0001	2,00	2,00	2,00	2,36	2,00	2,00
2CCG001742R0001	2,00	2,00	2,00	2,54	2,00	2,00
2CCG001743R0001	2,00	2,00	2,00	2,87	2,00	2,00
2CCG001744R0001	2,00	2,00	2,00	3,41	2,00	2,00
2CCG001745R0001	2,00	2,00	2,00	4,41	2,00	2,00
2CCG001746R0001	2,00	2,00	2,00	2,15	2,00	2,00
2CCG001747R0001	2,00	2,00	2,00	2,23	2,00	2,00
2CCG001748R0001	2,00	2,00	2,00	2,36	2,00	2,00
2CCG001749R0001	2,00	2,00	2,00	2,54	2,00	2,00
2CCG001750R0001	2,00	2,00	2,00	2,87	2,00	2,00
2CCG001751R0001	2,00	2,00	2,00	3,41	2,00	2,00
2CCG001752R0001	2,00	2,00	2,00	4,41	2,00	2,00
2CCG001753R0001	2,00	2,00	2,00	2,15	2,00	2,00
2CCG001754R0001	2,00	2,00	2,00	2,23	2,00	2,00
2CCG001755R0001	2,00	2,00	2,00	2,36	2,00	2,00
2CCG001756R0001	2,00	2,00	2,00	2,54	2,00	2,00
2CCG001757R0001	2,00	2,00	2,00	2,87	2,00	2,00
2CCG001758R0001	2,00	2,00	2,00	3,41	2,00	2,00
2CCG001759R0001	2,00	2,00	2,00	4,41	2,00	2,00
2CCG001760R0001	1,50	1,50	1,50	0,77	1,50	1,50
2CCG001761R0001	1,50	1,50	1,50	0,88	1,50	1,50
2CCG001762R0001	1,50	1,50	1,50	1,00	1,50	1,50
2CCG001763R0001	1,50	1,50	1,50	1,44	1,50	1,50
2CCG001764R0001	1,50	1,50	1,50	1,16	1,50	1,50
2CCG001765R0001	1,50	1,50	1,50	1,89	1,50	1,50
2CCG001766R0001	1,50	1,50	1,50	2,70	1,50	1,50
2CCG001767R0001	1,50	1,50	1,50	0,77	1,50	1,50
2CCG001768R0001	1,50	1,50	1,50	0,88	1,50	1,50
2CCG001769R0001	1,50	1,50	1,50	1,16	1,50	1,50
2CCG001770R0001	1,50	1,50	1,50	1,44	1,50	1,50
2CCG001771R0001	1,50	1,50	1,50	1,89	1,50	1,50
2CCG001772R0001	1,50	1,50	1,50	2,70	1,50	1,50
2CCG001773R0001	1,50	1,50	1,50	1,00	1,50	1,50

Glossary

Environmental impact Indicators	
GWP-total	Global Warming Potential total (Climate change)
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential
EP-freshwater	Eutrophication potential - freshwater compartment
EP-marine	Eutrophication potential - fraction of nutrients reachin marine end compartment
EP-terrestrial	Eutrophication potential - Accumulated Exceedance
POPCD	Formation potential of tropospheric ozone
ADP-m&m	Abiotic Depletion for non-fossil resources potential
ADP-fossil	Abiotic Depletion for fossil resources potential, WDP
WDP	Water deprivation potential

Resource indicators	
PENRE	Use of non-renewable primary energy excluding renewable primary energy resources used as raw
PENRM	Use of non-renewable primary energy resources used as raw material
PENRT	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials
PERE	Use of renewable primary energy excluding non-renewable primary energy resources used as raw material.
PERM	Use of renewable primary energy resources used as raw material
PERT	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)

Secondary materials, water and energy resources	
SM	Use of secondary materials
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Net use of fresh water

Output flow indicators	
CfRu	Components for re-use
MfR	Materials for recycling
MfER	Materials for energy recovery
EE	Exported Energy

Waste category indicators	
HWD	Hazardous waste disposed
N-HWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed

References

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[11] LB-DT 17-21D - RoHS II (MCCBs and ACBs)

[12] LB-DT 18-21D - REACH (MCCBs and ACBs)

[13] 1SDL000571R0 Ver 01 - RoHS Exemptions (MCCBs and ACBs)

[14] 1SDL000572R0 Ver 01 - SVHC present in excess of 0.1% (MCCBs and ACBs)

